Original Article

Inguinal Hernial Repair

Effectiveness of Non-Mesh (Shouldice) Versus Mesh (Lichtenstein) Repair in Inguinal Hernia

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ABSTRACT

Objective: To evaluate the optimum method of repair for inguinal hernia with respect to low rate of recurrence, minimum postoperative pain and cost effectiveness.

Study Design: Retrospective and Comparative study.

Place and Duration of Study: This study was conducted between 2004-2007 in the surgical department DHQ Hospital Karak from .

Materials and Methods: Either 320 patients were randomly allotted to mesh or non-Mesh repair. They were followed up at the 1st week and then 1, 6,12,18,24 and 36th month. Clinical outcome that is, recurrence rate, quality of life, Post-oparative pain etc were noted.

Results: After 3 year, the recurrence rates were significantly different for the two types of repairs.

Conclusion: The Shouldice is usually suited in primary and unilateral inguinal hernial repair in adult males. In addition, The Lichtenstein is best for bilateral and recurrent inguinal hernial repair in old patients (>60Yrs) and in elective states of repair.

Key Words: Shouldice, Lichtenstein, Inguial Hernia

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INTRODUCTION

The Shouldice procedure is performed in 4 layers (Glassow)[1]. After herniotomy, the fascia transversalis is cut horizontally, starting at the stretched deep inguinal ring and proceed medially to the pubic tubercle, safeguarding the inferior epigastric vessels. The upper and lower flaps of fascia transversalis are formed. The lower flap is stitched to the under surface of the upper flap and the upper flap is stitched to the upper surface of the lower flap with 2/0 prolene. The conjoint tendon and the lateral fleshy part of the internal oblique and transversus abdminus are stitched to the enrolled edge of inguinal ligament in two layers with 2/0 prolene. Finally the external oblique is stitched over the cord with catgut 1. Mesh (the Lichtenstein) repair for inguinal hernia: This is the open method of reinforcement of the posterior inguinal wall by placing and fixing a synthetic Marlex or polypropylene mesh of various

sizes. The inguinal hernia repair is the oldest and the most commonly performed operation by general surgeon all over the world [2]. Decreased rate of recurrence is highly desirable as failure imposes great economic burden and psychological trauma to the patient. The recurrence rate for the non mesh i.e. *shouldice* varies between 0.2-15% depending upon the experience of surgeon, the length of follow up, wound infection, wound seroma or haematoma formation, family history, bilaterality, associated with other hernia, age, diabetes, steroids treatment,smoinking,obesity, chronic chough, constipation and prostatism etc. Lichtenstein, is the open method of placement of polypropylene / Marlex mesh, is the tension free repair and was introduced by Lichtenstein et al in 1989 [3-4-5] .It was for the first time performed under local anesthesia and has the lowest recurrence rate in the long term. It takes less time to perform, easy to learn and with a fewer recurrences.

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MATERIALS AND METHODS

Patients were operated either by Lichtenstien or Shouldice method. The treatment protocol was that at the time of induction of anesthesia, a single dose of broad spectrum anti-biotic IV given. General Anesthesia was used for 75% of cases, Spinal Anesthesia was used for 20% of cases and Local Anesthesia was used for 5% of cases. Non-Mesh (the Shouldice), the suture repair, was done with 2/0 prolene

while Mesh repair the (Lichtenstein), was done with prolene mesh of variable sizes.

RESULTS

Patients were followed up at the first week then at 1, 6,12,18,24 and 36th months. A total of 320 cases were operated for inguinal hernia.

Surgical Techniques:

1. Mesh (Lichtenstien) Repair: Done for 70 cases.
2. Non Mesh (Shouldice) Repair: Done for 150 cases.

Recurrence (Table 1):

Table No.1: Patients with primary and unilateral inguinal hernia.

Total Patients	220
Age	25-65 Years
Average	45
Male	150
Female	70
M-F	3:1

For Non Mesh Repair: 3 recurrences out of 150.
Recurrence rate: 2%.
For Mesh Repair: 1 recurrence out of 70.
Recurrence rate: 1.4%.
Out of these 100 patients, 20 patients were with bilateral inguinal hernia making a total of 120 operations and the remaining 80 patients were with recurrent inguinal hernia (Table 2).

Table No.2: Patients with Bilateral & Recurrent Inguinal hernia

Total Patients	100
Age	35-85Yrs
Average	60 Yrs

Surgical Techniques:
1. NON-MESH (Shouldice) Repair:
10 patients with bilateral inguinal hernia and 30 patients with recurrent hernia, making a total of 50 operations.
2. MESH (Lichtenstein) REPAIR:
10 patients with bilateral inguinal hernia and 50 pts with recurrent inguinal hernia, making total 70 operation.

Recurrence:

1. FOR NON-MESH (the Shouldice) Repair: 3 recurrences out of 50.
   Recurrence rate: 6%
2. MESH (the Lichtenstein) Repair: 2 recurrences out of 70.
   Recurrence rate: 2.8%

Patient under gone for either Shouldice or Lichtenstein procedures were usually discharge within 24 to 48hrs if they did not develop complications.

DISCUSSION

We see from the results of the recurrences that the difference between Mesh (Lichtenstein) repair and the non Mesh (Shouldice) repair is not marked for unilateral and primary inguinal hernia, while this difference is quite marked for bilateral and recurrent inguinal hernia. This shows that Lichtenstein repair is the best and superior for bilateral and recurrent inguinal hernia, while the Shouldice repair is best for unilateral and Primary Inguinal Hernial Repair. Furthermore, there is an increasing number of Published mesh related complications and complaints such as; dislocation, fistula formation, sperm granuloma, paraesthesia, azospermia, wound infections, post operative pain and cost ineffectiveness [6-7]. Lichtenstein repair for primary inguinal hernia in young patients is not universally approved of by the specialists [8-9]. Until the last decade, the Shouldice procedure (1945) was used for inguinal hernia and was regarded as the standard procedure for inguinal hernia in Europe [10]. In Shouldice clinic at Toronto, the rate of recurrence was less than 1%, while multi-centric randomized trial has reported a recurrence rate between 6 -15% on long term basis [11]. In suture repair, the suture line tension(causing ischemia) is responsible for recurrence and post operative pain. In the Classic Shouldice, the suture line tension is the least while in Bassini's repair; the suture line tension is the highest [12]. Although the Lichtenstein procedure for inguinal hernial repair gives the lowest recurrence rate but it is the Shouldice which is most commonly perform for inguinal hernial repair [13]. The low rate of recurrence reported by the Shouldice clinic could not be achieved at other non specialized centers. In randomized controlled study, the long term (10-15 years) rate of recurrence for Shouldice repair was 10-15% [14]. Lichtenstein repair gives immediate strength to tissue and with passage of time, a double layer is formed. In UK, Lichtenstein repair is popular as it gives the lowest recurrence rate on long-term basis [15]. Early post operative pain was present in both the procedures but chronic pain and wound infection was more common in the Lichtenstein procedure. Miedema et al, has reported a higher incidence of chronic pain after Lichtenstein repair compared with Shouldice repair (38% versus 07% $P< 0.001$) [16-17-18-19]. Wound infection was present in 4-6% of cases in the Shouldice procedure while it was 8-10% in the Lichtenstein procedure in our study. Lichtenstein repair is superior for inguinal hernial in the following conditions: -

1. Bilateral and recurrent inguinal hernia.
2. In old patients with stretched, weak and deficient musculature in the groin.
3. When the hernia size is more than 3cms.

4. It should be performed in a good condition of sterilization and should be covered with pre and Post operative antibiotics.

Shouldice Repair is a Gold Standard for primary and unilateral inguinal hernial repair in adult males. It is relatively simpler and the most commonly performed operation for inguinal hernia now a day [20-21].

CONCLUSION

1. The Shouldice is usually suited in primary and unilateral inguinal hernial repair in adult males.
2. The Lichtenstein is best for bilateral and recurrent inguinal hernial repair in old patients (>60Yrs) and in elective states of repair.

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